

Viewing King County from a Different Angle

Using Pictometry Software to view Vertical and Oblique Imagery

Some Background – Two Projects

Project 1: King County participates in periodic high-resolution orthophotography projects – every 2 to 3 years. These projects, recently in conjunction with regional cities and agencies, provides high quality, accurate orthophotography for basemap and mapping use. The KCGIS Center makes this data available to all King County GIS users through its enterprise data library. Accessible through any software that can view images as TIFF or SID files.

Project 2: Led by the EMS E911 Program Office, the County also funds a biennial acquisition of Pictometry oblique and orthogonal imagery. This imagery (2005, 2007, 2009, 2011, 2013, and now, 2015) is used in customized E911 applications. It is also made available to all other cost-share partners, including the KCGIS Center and Technical Committee agencies. This data has comparable pixel resolution to Project 1, but does not generally attain the same high quality and accuracy specifications required for the KCGIS orthophotography project. However, for many business applications the accuracy and quality are sufficient. Requires use of Pictometry software and extensions, available online and offline.

More Info about Pictometry Data

- * Imagery generally acquired for most years during full leaf-on or leafing-on conditions. Less frequent 'true' leaf-off imagery. Uplands acquired in summer (leaf-on)
- * Earlier years acquired as 0.5 foot resolution (lowlands) and 1.00 foot in the uplands
- * 2013 and 2015 imagery are 0.33 foot in the lowlands and 0.75 foot resolution in the uplands

Some Terminology

- * Two Image Types
 - * **Vertical** – Images taken from a straight-down perspective - a traditional ‘orthogonal’ view; sometimes called nadir view
 - * **Oblique** – Images taken from approximately a 45 degree perspective, producing an angled view
- * Two Image Levels
 - * **Neighborhood** – Lower altitude images containing the highest level of detail (i.e., 0.5 ft to 0.33 ft resolution). Basically, west portion of King County, i.e., urban and suburban areas.
 - * **Community** – Higher altitude images providing a lower level of detail, but a larger ground footprint. Covers eastern King County, upland areas.

Project Extent and Resolution Areas: Pictometry Acquisition



Your Options

- * Three ways to access Pictometry imagery
 - * Pictometry Online (POL) – **Being retired**
 - * Pictometry ArcGIS Desktop Connect – **Available**
 - * Pictometry Connect Explorer – **Replacing POL**
- * Same login credentials are used for all applications, but you can be logged into only one application at a time. It will prompt you to log out from duplicate session if necessary.

We will go through a brief discussion of POL and Desktop Connect, then login to ConnectExplorer and provide an opportunity for you to go through a hands-on tutorial.

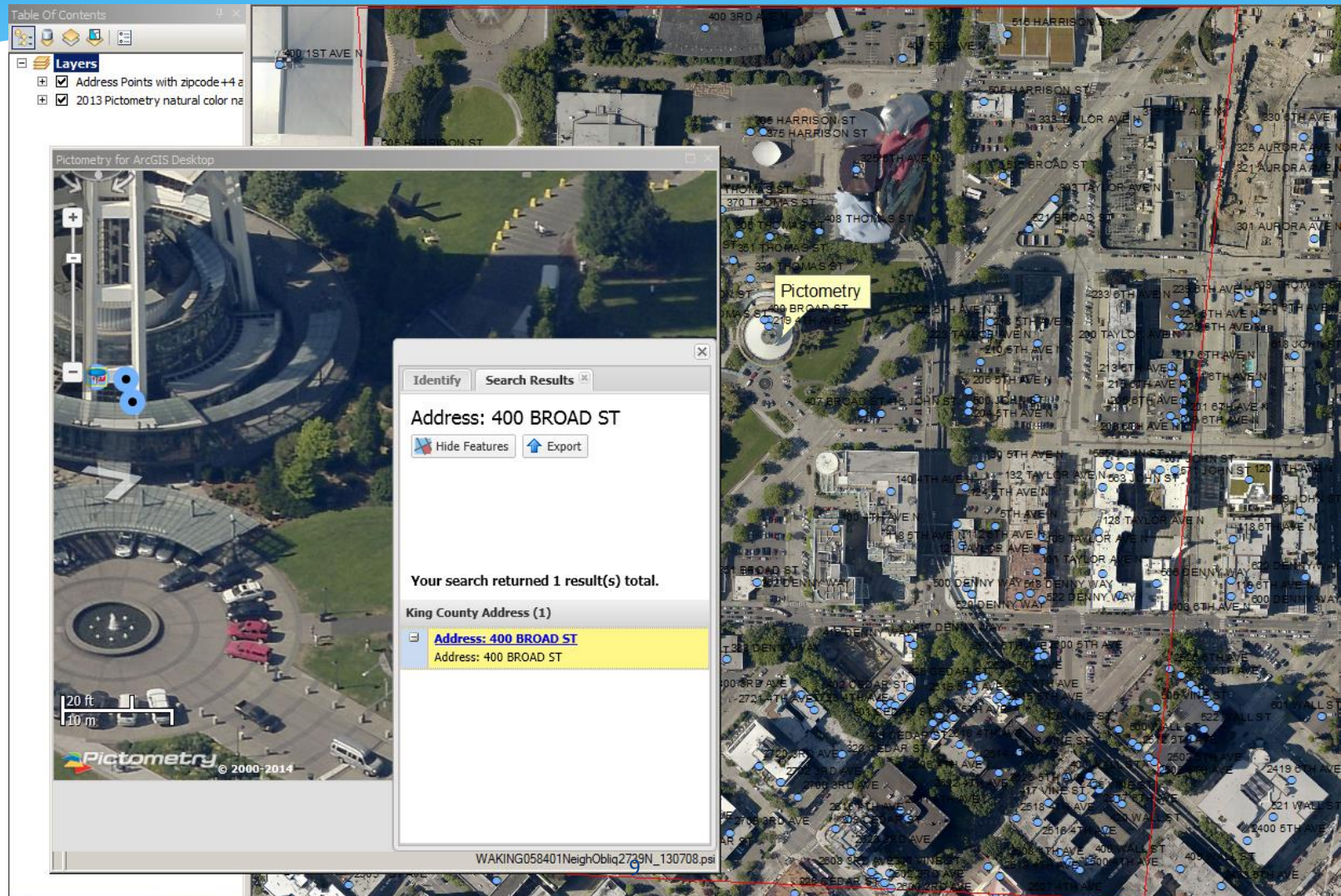
Pictometry Online (POL)

- * Formerly Pictometry's flagship product
- * Like Connect Explorer, a web-accessible application – requires only a browser. Seems to work well in IE
- * Access to full imagery libraries and host of analytical, measurement and mark-up tools for working with orthogonal and oblique imagery
- * Can create and save 'workspaces', comparable to ArcMap projects
- * Vector overlay data available, but limited to those themes hosted by POL administrators
- * Somewhat limited map-making capabilities, but options to print and export
- * Pictometry opted to roll their 'heavy' client functionality into their 'light-weight' client (ConnectExplorer), and substantially update the 'look-and-feel' of ConnectExplorer.
- * *No need to say anymore as this is being retired and existing users of POL will need to migrate to ConnectExplorer*

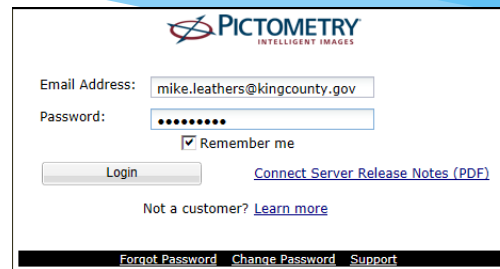
Pictometry ArcGIS Connect

- * Connects to online image libraries through ArcMap
- * Same imagery as available in other options
- * Adds a tool bar to ArcMap that contains a subset of the functionality of their newest online software
- * Main difference is that it displays imagery in window separate from main ArcMap window
- * Allows viewing of **ALL** enterprise vector data along side Pictometry imagery
- * Can 'warp' an oblique image to appear in ArcMap window where it can be overlain with vector data

Pictometry ArcGIS Connect



Pictometry ArcGIS Connect



PICTOMETRY
INTELLIGENT IMAGES

Email Address:

Password:

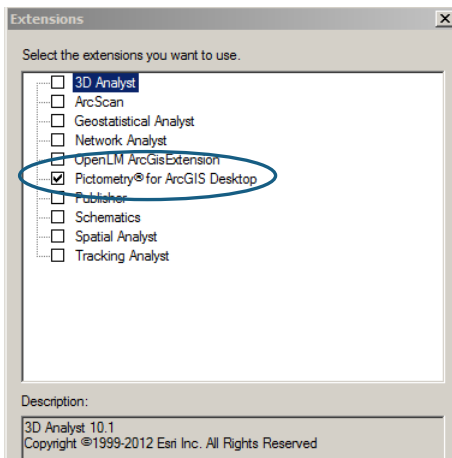
☒ Remember me

[Connect Server Release Notes \(PDF\)](#)

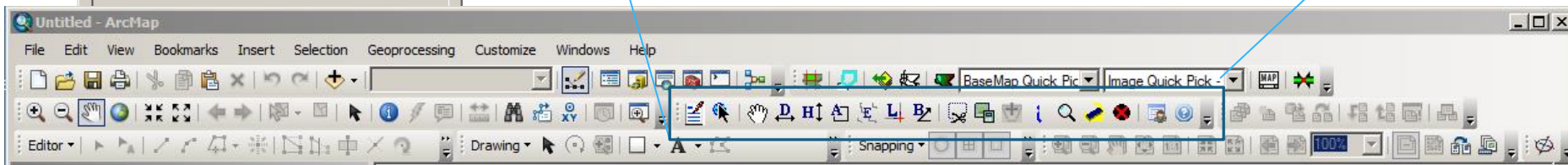
Not a customer? [Learn more](#)

[Forgot Password](#) [Change Password](#) [Support](#)

Using Search Image Tool
will prompt connection to
Online imagery.



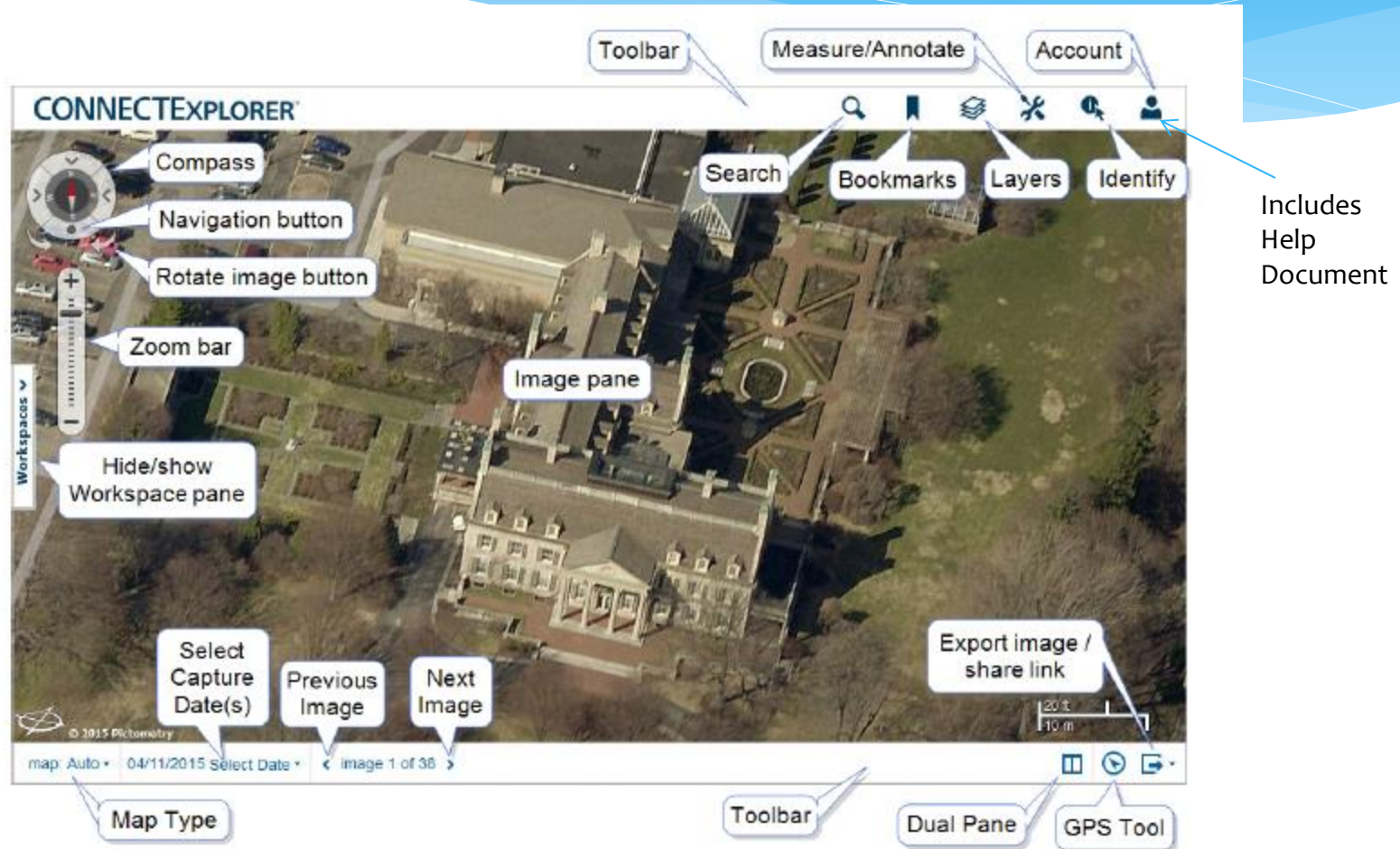
Turn on Extension and Toolbar to access tools
that allow you to load and view oblique imagery



Pictometry Connect Explorer

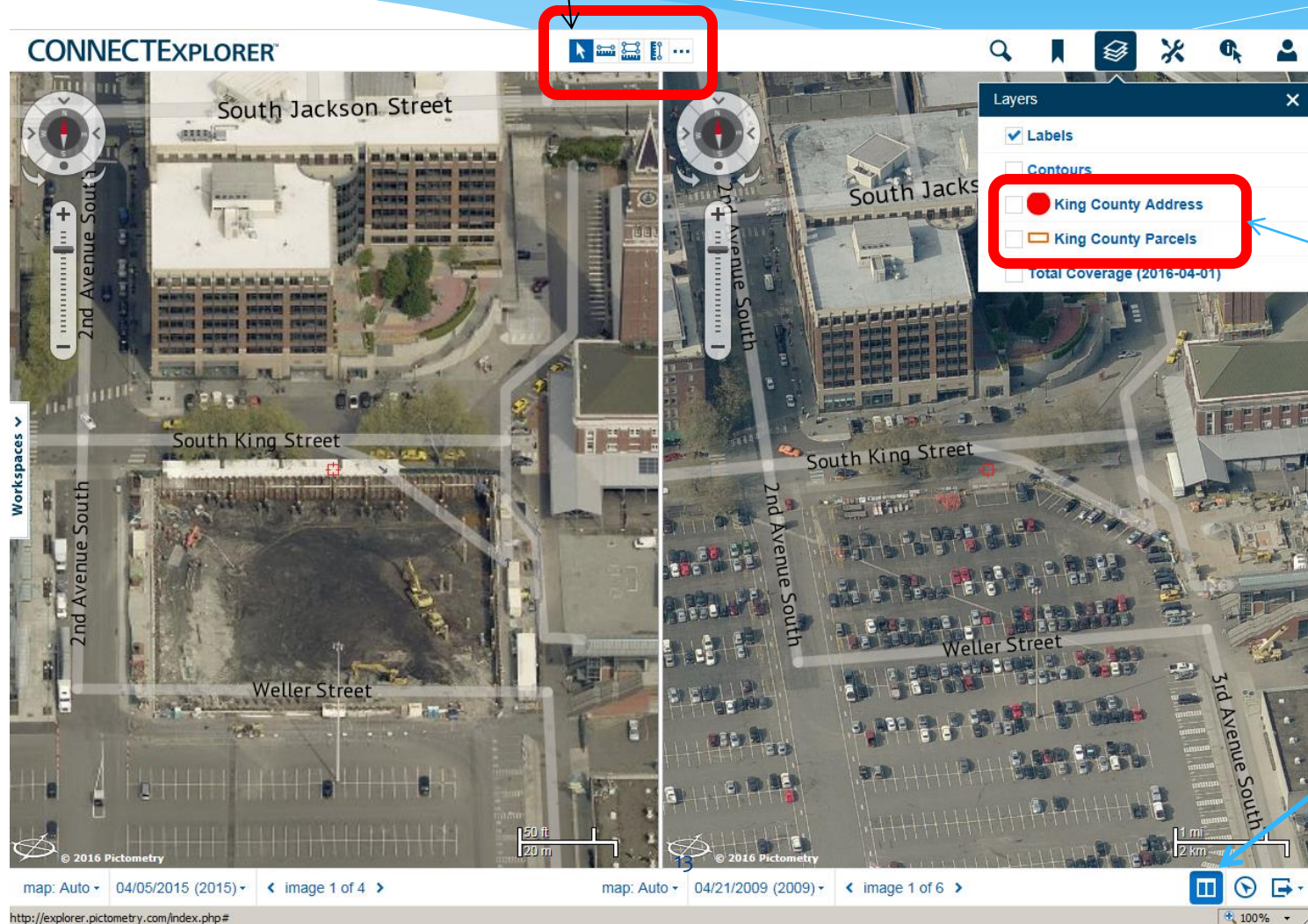
- * Pictometry's new flag-ship, browser-accessible interface for viewing imagery from all years with enhanced functionality.
- * 'Google-map' interface with drop-down menus and pick-lists
- * A wide range of mark-up (annotation) tools
- * Full suite of measurement and analytical tools
- * Supports Workspaces (saved projects)
- * No longer have to decide if you need to use POL or ConnectExplorer. But your business needs may dictate whether you use ConnectExplorer and/or ArcGIS Pictometry Connect

ConnectExplorer: Application Window



ConnectExplorer: Application Window

Mini Toolbar short-cut



King County layers

Using Dual Pane Mode

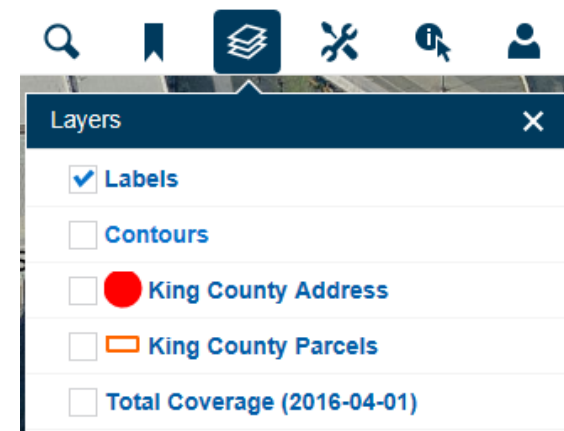
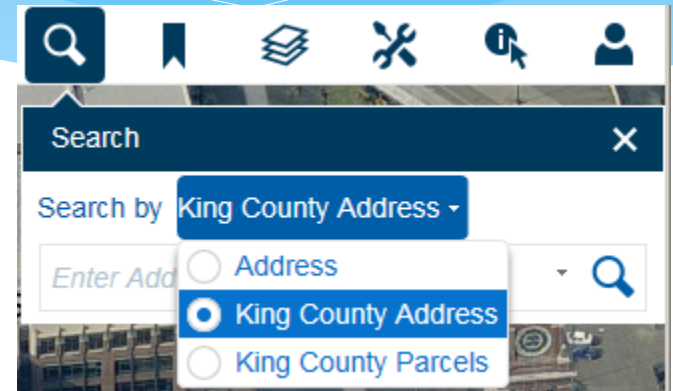
ConnectExplorer: Search Options, Labels and Contours

Search bar provides options to search by:

- Address
- Parcel
- Latitude/Longitude
- Landmarks (i.e., ‘Space Needle’)

Search tool and **Layers** may show other Layers besides “King County Address” and “King County Parcels”. If others appear generally use ones starting with “King County ...” when searching for KC addresses and parcels.

Labels can be useful – displays street names.
Contours are not detailed but can be used for general elevation information.



Tutorial – Using ConnectExplorer

- * Open your browser
- * Go to **explorer.pictometry.com**

The screenshot shows the ConnectExplorer login interface. At the top, the text 'CONNECTEXPLORER™' is displayed in large white letters, with 'EAGLEVIEW PICTOMETRY' below it. The background is an aerial view of a residential area with a lake. On the left, there is a login form with the following elements:

- Email Address:** A text input field containing 'mike.leathers@kingcounty.gov'.
- Password:** A text input field with masked characters (dots).
- ☐ Remember Me
- Two blue buttons: 'CONNECTExplorer™' and 'CONNECTAdmin™'.

On the right, there is a promotional box with the text:

Did you know the new
CONNECTEXPLORER™
is the premier visualization
capabilities platform?
Try it now!

Below this, it says: 'Get complimentary training on the new CONNECTExplorer and all Pictometry® solutions. [View the schedule](#)'.

At the bottom, a dark bar contains links: 'Contact Sales | Forgot Password | Change Password | Customer Support | Performance Tips | Training Videos'.

Red arrows from the text on the right point to the email and password fields in the login form.

Enter your King County
Email address

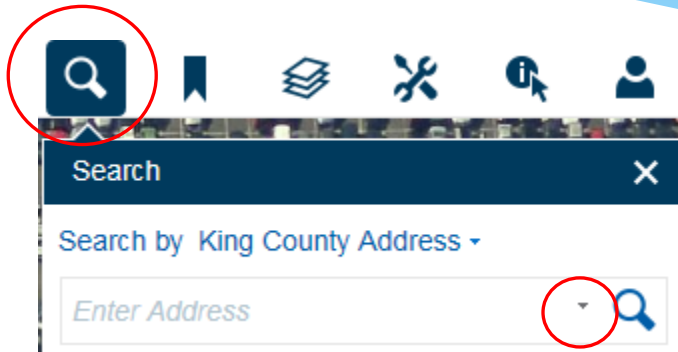
Enter password:
Temp01

(A capital **T**, **emp**
followed by a zero
(**0**) and a one (**1**)

Or other password
that you were
assigned

Click on “Connect
Explorer”, or just
“Enter” after
completing your
password.

ConnectExplorer: Searching for where you live

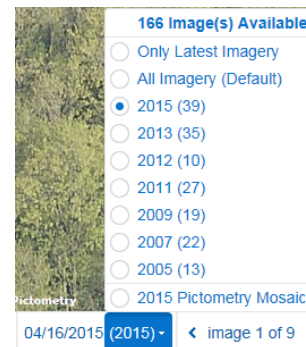


Search for where you live. Use the **Search** tool and make sure you are searching by **King County Addresses** (from the drop-down).

Enter your street number and street name, Hit 'Enter' to search and return your results.



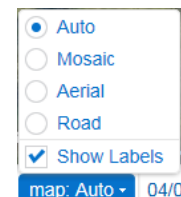
Use the compass (> V <) to rotate through obliques, or choose the ● to view top-down (vertical or nadir) imagery. Depending where you live you may have 4-direction obliques (higher-resolution neighborhood) or only 2-direction obliques (lower resolution community) for a given flight date(s).



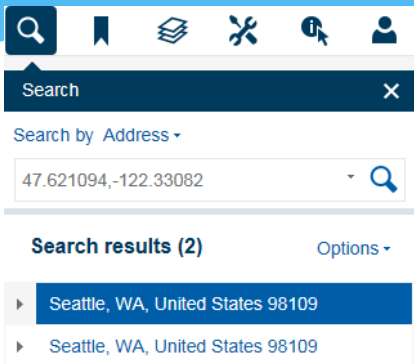
How many images are available for 2015? Bring up list on footer bar (bottom left, where it says **Select Date**) and choose 2015.

Cycle through your available images using < and >

Options for the big-picture view - Choices of basemaps from 'map' option at bottom-left-most menu: Auto = Vertical/Oblique libraries, Mosaic (Pictometry base), Aerial (Bing), and Road (Bing road layer only)



ConnectExplorer: Searching by Latitude and Longitude



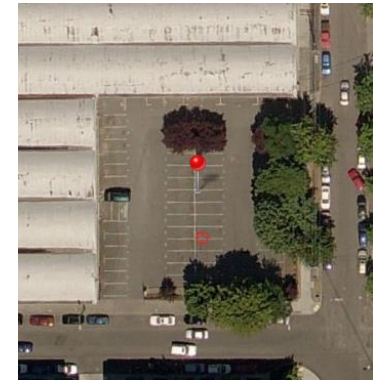
Notice that there is some slight “shifting” of the buildings adjacent to parking lot. All aerial imagery will see elevated features, like buildings, lean one way or the other but you should keep in mind that Pictometry vertical imagery is not ‘controlled’ to the same extent as a standard orthophotography project.

1. To search by Latitude/Longitude, you must use just plain **Address**, not **King County Address**. Enter the latitude, then a comma, followed by the longitude. Don’t forget to include the negative sign in front of the longitude, and you need to enter the following decimal degrees values: Latitude: **47.621094** Longitude: **-122.33082**. A successful search should be pinned on a parking lot.

2. If you are looking at an oblique image, click the dot on the compass to view vertically. You will be shown only vertical imagery.

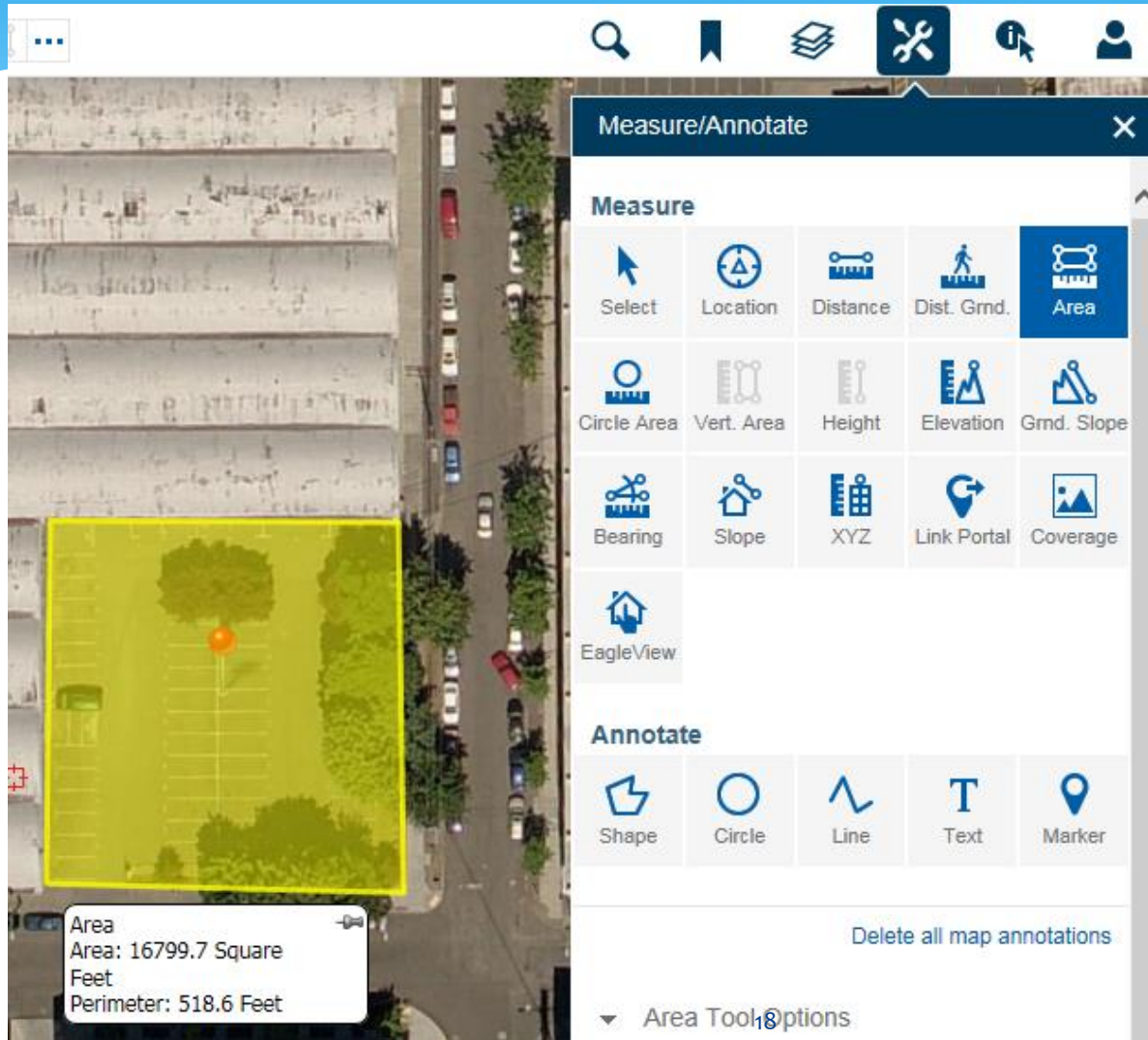


3. Under **Select Date** (at bottom) choose **All Imagery (Default)**. This should provide you with about 37-39 vertical images to choose from. Cursor (scroll) through your available imagery using the < and > arrows. Notice that although all the images are vertical, not all the images are centered on the location. This is because the Pictometry data libraries are comprised of thousands of overlapping images, not a set of regular tiles like a standard orthoimagery project.



4. So settle on one vertical image that gives you a good view of the parking lot

ConnectExplorer: Measuring Area



1. Choose the **Area** tool from the **Measure / Annotate** menu.

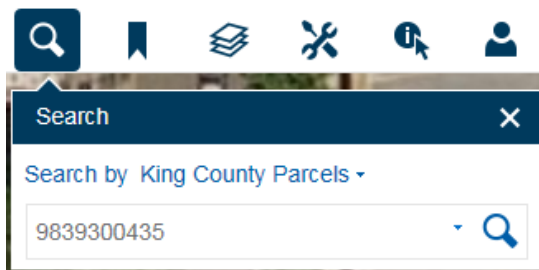
2. Move your mouse over to the parking lot. Left-click to add a vertex to define each corner of the lot, double-clicking at the end to close your polygon encompassing the parking lot.

3. The annotation (area and perimeter) will disappear once you use another tool, but you can “pin it” by clicking on the stick pin icon to make it persist.

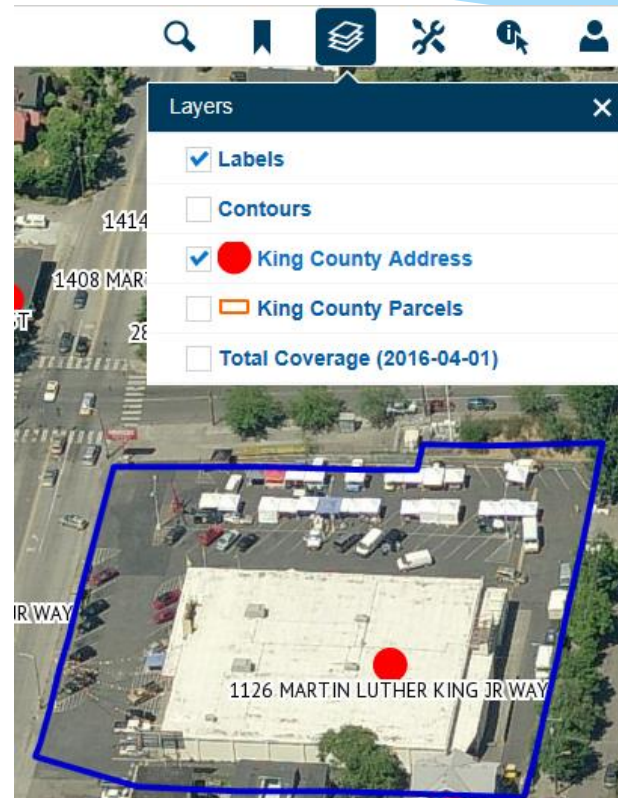
Hint: If you need to move a vertex, use the “Select” tool. Double-click the polygon to make the vertices appear. These can then be moved.

ConnectExplorer: Search by PIN

1. Let's do another search. Use your **Search** tool, but this time set it to search by **King County Parcels**. Enter the PIN: **9839300435** and run your search.




2. Hopefully you now see a large warehouse building, with the parcel boundary outlined. This is a selected set showing just this parcel, not all the parcels.



3. If you wanted to show all the parcel outlines, you would make that layer active from the **Layers** menu. But for now use the **Layers** menu to turn on **King County Address** so you can determine the address of the building that occupies the parcel you just searched for.

ConnectExplorer: Identify GIS Layers

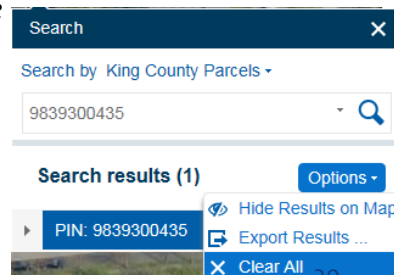
What is the PIN for the parcel on the southeast corner of the warehouse lot, i.e., the one bounded by Martin Luther King Jr Way and East Spring Street?

1. You have different options to determine this: But let's use the Identify Tool . This menu provides options to identify by Point, Box (Polygon) and Line, as well as set a buffer. It also lets you control which GIS layers will be queried. It should say “Layers: All Layers (2)”. If it does not, click on All Layers (2) and check **Search All** under **Layers to Identify**. Even though we wish to only query King County Parcels, this is a good default setting, since there are only two layers.
2. With the mouse cursor, click on the adjacent, unknown parcel. It will show up as a blue outline adjacent to the original parcel. The PIN identified is also returned to the **Identify Tool Results by layer** window.



If you wish to clear the original warehouse parcel so only your Identify parcel is outlined, you can clear the large parcel by choosing **Search>Search**

Results>Options>Clear All. Notice that it only clears the warehouse parcel, and not the one you Identified which is still in the Identify Results by layer.



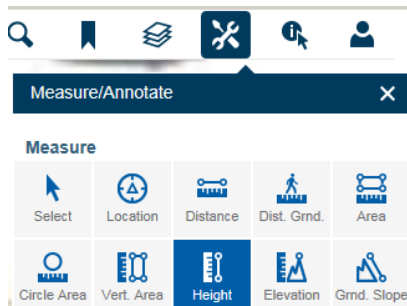
3. Finally, you also have the option to export your Identify Results under the **Results by layer > Options** where you can write out a list of your selected features to a csv (spreadsheet) file.

ConnectExplorer: Measuring Height

We are now going to investigate the warehouse in more detail. If **King County Address** is still on, go to the **Layers** menu and turn this layer off.

If you are viewing the parcel with the warehouse in a vertical image, use the compass to choose an oblique image that gives you a clear view of the north side of the warehouse – the side facing the larger parking lot on East Union Street. Choose from any date. Now use your mouse's scrolling wheel or the scale slider to zoom in tightly on the building face. You may also need to pan (the hand icon) to center the side of the building.

a. Choose the **Measure/Annotate** tool bar




b. Choose the **Height** option

c. Click with your mouse at the point at the bottom of the wall. Click again at the top of the wall. *Hint: Don't drag the mouse, click then click.*



d. The annotation line (yellow) showing the measurement will appear along with a label in the box. It has the pin that can be toggled to make the annotation and label persist, if you want that.

e. The label can be moved if it blocks your annotation. Clicking the box with the Select tool  will make the small plus sign appear in the upper left of the box. This 'handle' can be used to relocate the label.

ConnectExplorer: Measuring Distance

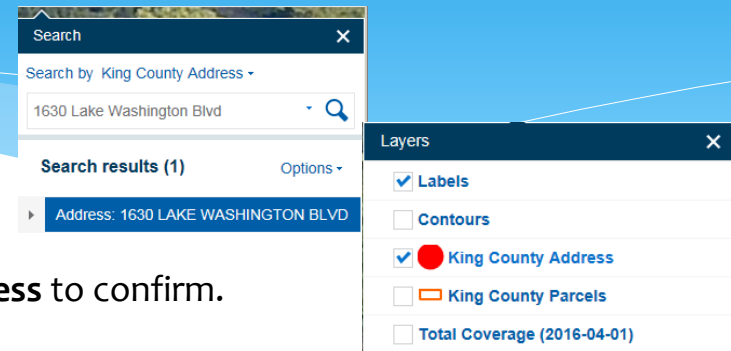
1. Using the **Search** tool and **King County Address**, search for **1630 Lake Washington Blvd**.

2. Using the **Layers** menu, turn on **King County Address** to confirm.

3. If necessary pan and zoom in to the 'L' shaped dock on the water

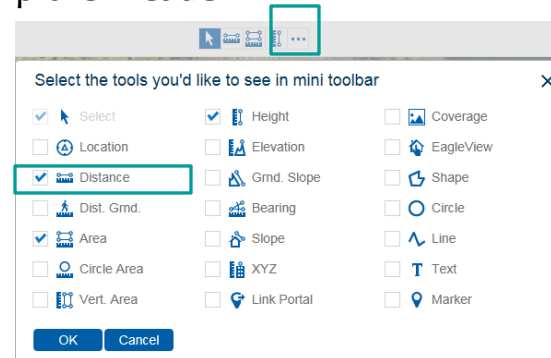



It should make no difference whether you measure from an vertical or oblique image, though the vertical view may provide a clearer view.




4. Let's assume that your workflow requires using the **Distance** tool frequently. Click the ellipsis (...) next to the **Mini Toolbar** in the ConnectExplorer header.

5. Here you can choose tools to list as shortcuts on the mini toolbar. If the Distance tool is not already checked, check it so that it appears on the mini toolbar. Dismiss the mini toolbar screen by clicking the X in the upper right.



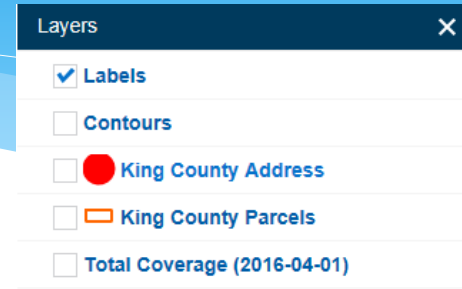
6. Now determine the length of the dock (including the turn), using the **Distance** Tool 

7. If the Distance label needs repositioning, choose the  **Select** tool to select and move it.

ConnectExplorer: Other tools

Zoom out some so you can see the intersection of **Lake Washington Blvd & East Olive Lane**, and still see the water. If necessary to see the street labels, use the **Layer** menu to turn on **Labels**. If other GIS layers are turned on, turn them off, but turn on the **Contours**

☒ **Contours**



If you need to redo a measurement tool, such as this Ground Slope tool, you can clear the previous annotation and label simply by starting over again. If you pin the annotation to make it persist, you can still delete all your annotations by choosing “Delete all map annotations” from the Measure/Annotate menu.

3. So we can add more information to your image to make a map, pin your annotation to make it persist.

2. Determine the rise in elevation from the property’s shore edge to the intersection of Lake Washington Blvd and East Olive Lane.

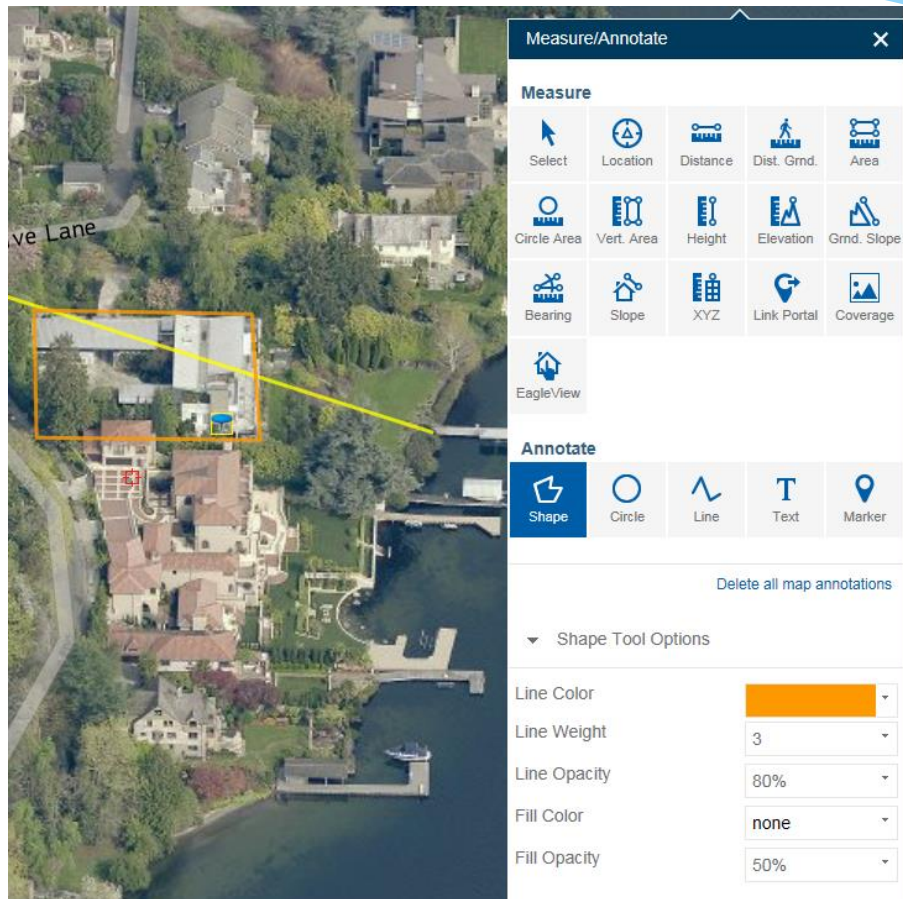
2a. First, estimate the change in elevation by counting the contours (the contour interval is 10 feet).

2b. Now, use the **Grnd Slope** (Ground Slope) Tool in the **Measure/Annotate** menu to calculate the elevation difference. How close are your two estimations? The Ground Slope tool also provides the percent slope and distance. Use the **Select** Tool if necessary to move the label so it does not block the line annotation.

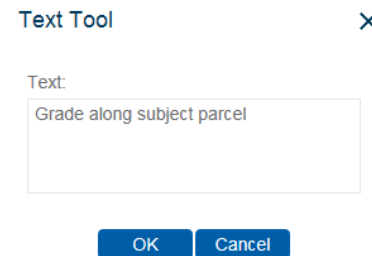



Don’t drag your mouse cursor. Click once at your start point and a second time as your end point

ConnectExplorer: Annotations



Add a box (polygon) annotation around the property of interest. Use the **Measure / Annotate Toolbar>Annotate>Shape** to draw the box. With the **Shape Tool Options** you can change the outline and fill color from the default yellow to a **Fill Color** of **none** and a line color of your choosing.

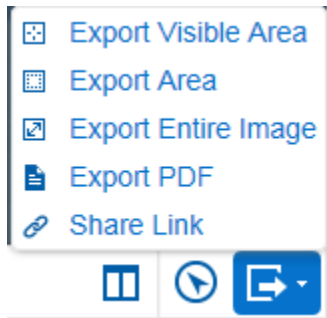


Using the Annotation Text Tool  to add some descriptive information: ***“Grade along parcel ...”*** to your map.

If you work with other mapping software, like ArcGIS, you realize that the map making options are limited with ConnectExplorer. Use the **Select** tool if it is necessary to move your title to make it more centered on your image.

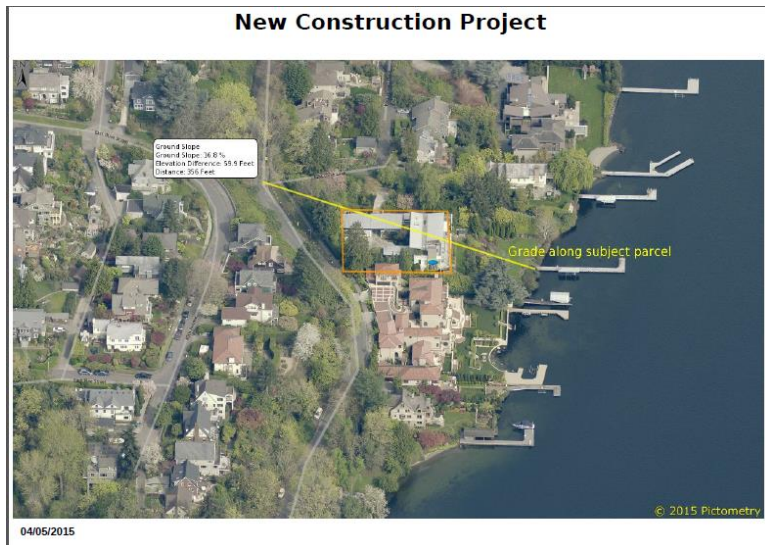
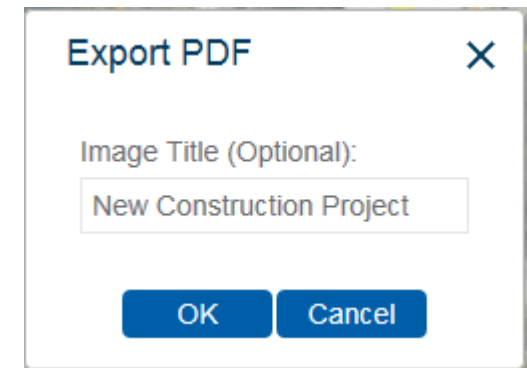
ConnectExplorer: Exporting

You do have several options for printing; click on the drop-down arrow next to the export icon in the bottom, right-most corner of the ConnectExplorer footer.



You can experiment with the various options, but today try the PDF option. Choose **Export PDF** and you will be prompted for an optional Map (Image) Title.

Clicking **OK** will generate a pdf document to the screen which then can be saved to file.

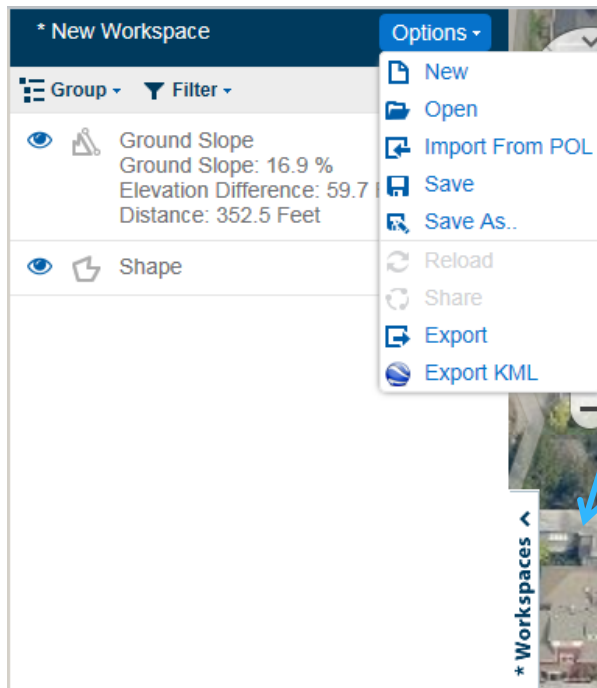


The other options provide different ways to export the image itself in a jpg format.

ConnectExplorer: Workspaces and Bookmarks

You can save your annotations and other mark-ups by creating a name **Workspace**, which is really just a saved project. Because you can be timed-out from a ConnectExplorer session, it can be a good idea to get into the habit of saving your session's work as a Workspace.

Workspaces



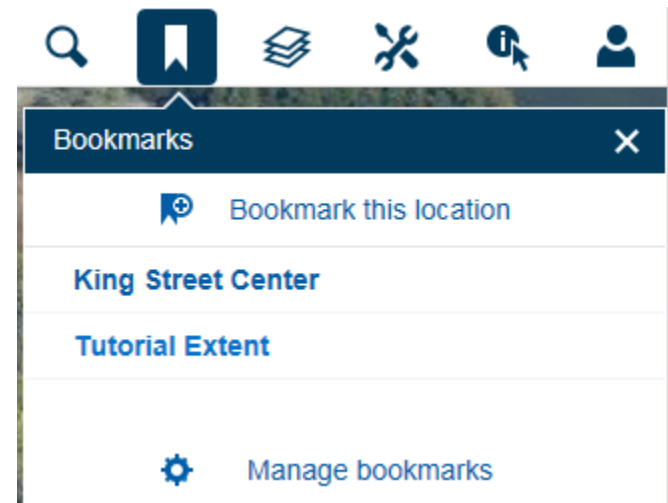
You can open the Workspace menu by using the 'pull-tab' on the left side of the main window.

You can control the contents of a Workspace by making individual annotation visible or invisible

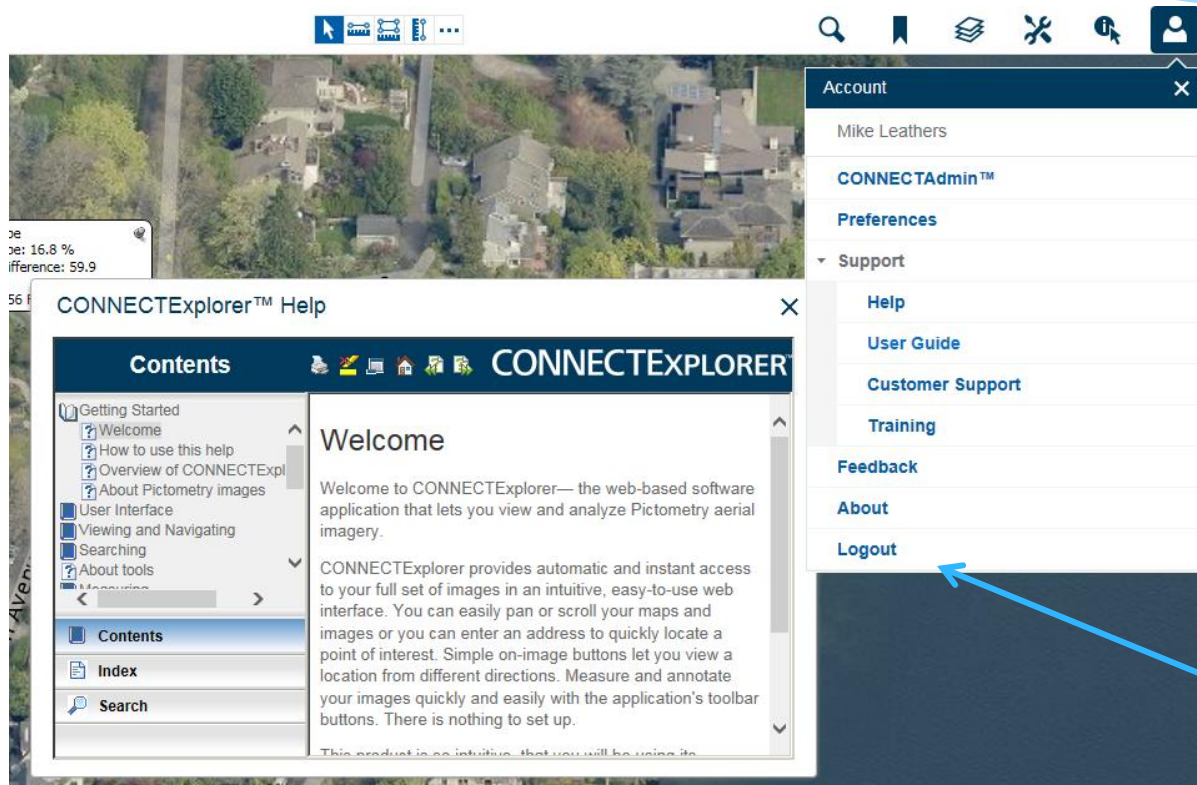
Bookmarks

Bookmarks are different than Workspaces.

A bookmark will zoom you to a previously used image location, but will not preserve annotations.



ConnectExplorer: Help and Resources



There are resources available to help you take advantage of all the functionality in ConnectExplorer

There is inline Help as well as a approximately 150 page User Guide

Finally, you can close your ConnectExplorer session by exiting your browser, but it is better if you **Logout**. Otherwise, you maybe prompted to logout of a 'hung' session the next time you try to log in.

Where From Here

- * Determining what tools and workflows perform best for you to meet your business needs.
- * If an ArcGIS ArcMap user consider using Desktop Connect.
- * Users are enrolled by agency name. Each agency has an admin who can assist in publishing supplemental agency vector data to your agency workspace. This data would be automatically available to all users within that agency login group.
- * Data can optionally be published to other agencies if you wish to make it available.
- * Enterprise-wide layers, such as PARCEL and ADDRESS are maintained by the KCGIS Center, and are updated about every 2 weeks. Other enterprise layers (which would be of use to most agencies) can be suggested.
- * Currently updates are manual, so admins must publish updates to Pictometry through Admin interface.

Where to go for Additional Information

- * Go to the Internal Spatial Data Catalog
- * <http://kcgisinternal.dnrp.kingcounty.lcl/intranet/sdc/index.htm>



Spatial Data Catalog

[KCGIS Vector and Tabular Data](#)
[KCGIS Raster Data](#)
[Non-KCGIS Vector Data](#)
[Non-enterprise Agency Data](#)
[Sensitive Data](#)
[GIS \(Spatial Data Catalog\) Search Tools](#) (Unqualified Link) [Help](#)
[GIS \(Spatial Data Catalog\) Search Tools](#) (Qualified Link) [Help](#)
[Metadata Publication, Portal Status, NonKCGIS Currency, etc.](#) (xlsx)
[Additional tools and Resources for finding and using GIS Data](#) (Overview (PDF Document))

- * Click on KCGIS Raster Data

KCGIS Raster Data:

General Information
[General reference](#) (Knowledge Base article: Understanding Raster Data)
[Tiling Scheme, Naming Convention, DataSet Extents and Tile Status](#) (details and links to metadata)
[DataSets in SDE](#) (pdf)

Orthophotography
[General information](#)
[Data Products](#)
[Project Image Library](#) (Smaller, project-specific imagery data sets).
[Pictometry Oblique Imagery](#) (Options on how to access and view multi-year 'side-looking' and nadir imagery).

Elevation
[General information](#)
[Data Products](#)

Landcover
[General information](#)
[Data Products](#)

Click on “Pictometry Oblique Imagery”
- Opens link to Information Page where You can access Help Guides and other Resources.

Questions?

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- * Mike.leathers@kingcounty.gov
- * 206-477-4403